

Design Assumptions for
Nebraska Base Drawing NE100-30-006
Debris Rack with Anti-Vortex Device for
36", 42", 48", 54", 60" and 72" Dia. Riser

Revised:03/03 Replaces:5001-8

**Debris Rack with Anti-Vortex Device for 36", 42", 48", 54", 60" and
72" Dia. Riser**

An anti-vortex device is required on all risers, this Debris Rack with the anti-vortex device meets this requirement for large diameter risers.

If the PI of the soil in the embankment is less than 15 the inlet area should be armor coated with riprap or have a concrete apron to prevent erosion.

Grouted rock riprap should be considered on all risers 42" dia. and larger for erosion protection.

Instructions for
Nebraska Base Drawing NE100-30-006
Debris Rack with Anti-Vortex Device for
36", 42", 48", 54", 60" and 72" Dia. Riser

Fill in the following data fields to automatically fill in the necessary data fields on the drawing.

Title block

Title line(s)

Subtitle line

County, State

Sheet number of

Who / When

Designed

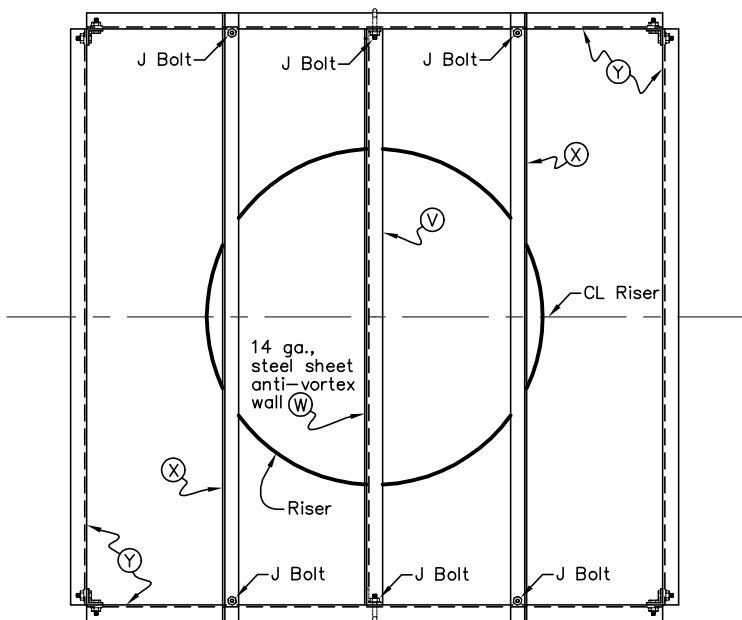
Drawn

Checked

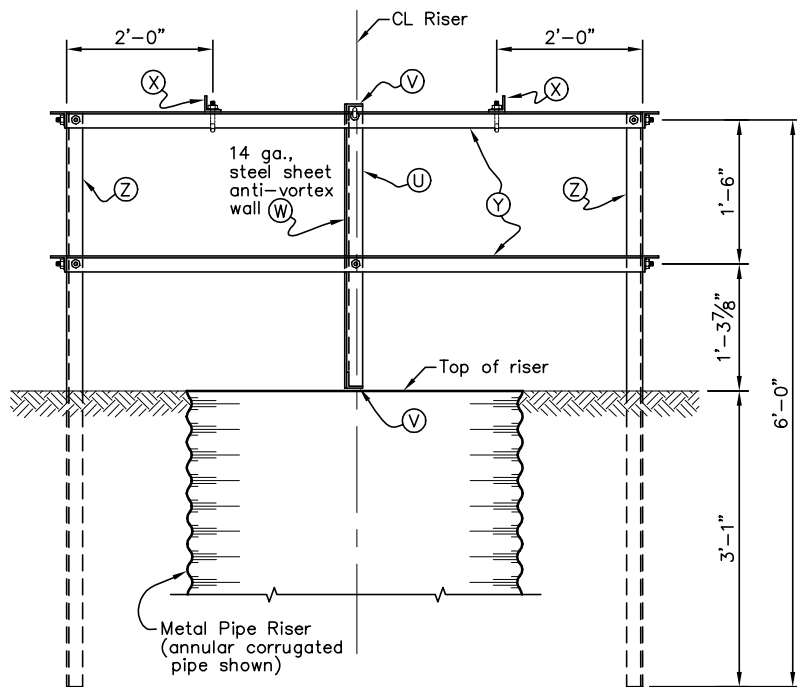
Enter directly on drawing

Left click on yellow boxes on drawing to mark with X as required.

Left click on blue data fields to enter required data.

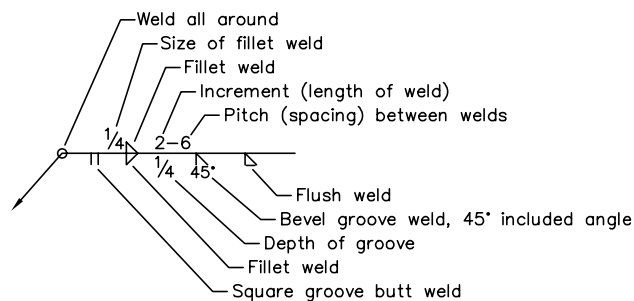


RACK PLAN VIEW

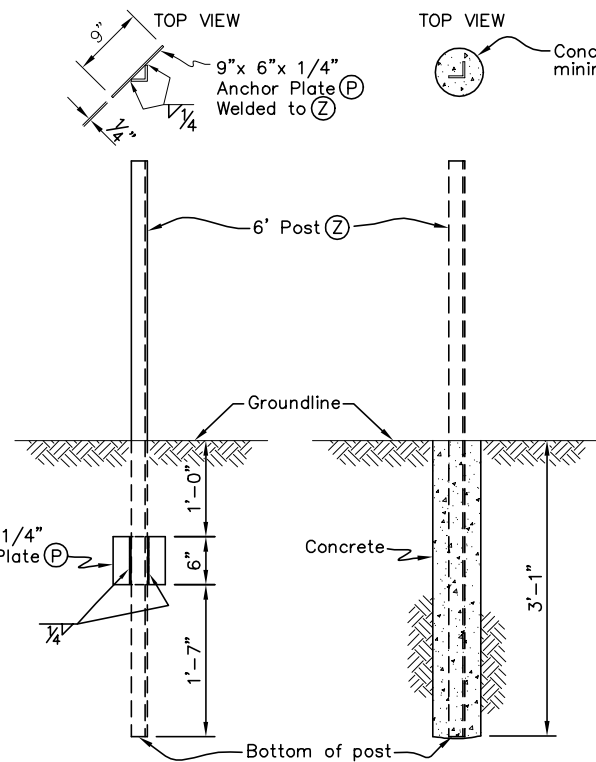


RACK ELEVATION

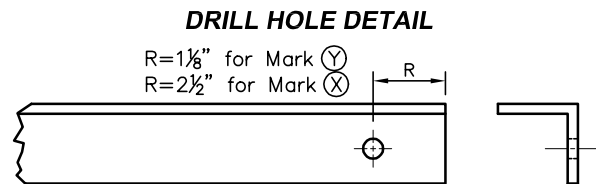
WELDING SYMBOLS



Note:
Symbol above line indicates weld is on the opposite side of joint to which arrow points.
Symbol below line indicates weld is on side of joint to which arrow points.
2-6 indicates making a 2" weld every 6 inches.



DETAIL "A" DETAIL "B"
ANGLE POST ANCHORING DETAILS



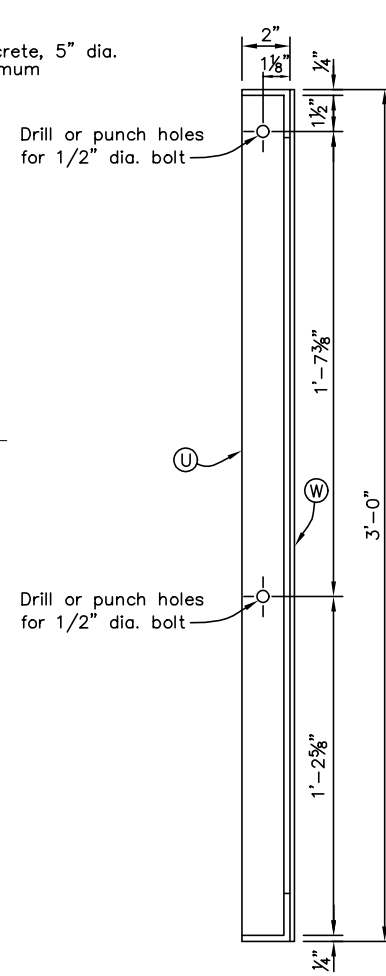
DRILL HOLE DETAIL

MATERIAL LIST

| MARK | ITEM | NUMBER REQUIRED | | | |
|------|--|----------------------|---------------------------|----------------------|--|
| | | 36" & 42" DIA. RISER | 48", 54" & 60" DIA. RISER | 66" & 72" DIA. RISER | |
| U | 2" x 2" x 1/4" x 2'-11" 1/2" ANGLES | 2 | 2 | 2 | |
| V | 2" x 2" x 1/4" x 6'-0" ANGLES | 2 | | | |
| V | 2" x 2" x 1/4" x 8'-0" ANGLES | | 2 | | |
| V | 2" x 2" x 1/4" x 9'-0" ANGLES | | | 2 | |
| X | 2" x 2" x 1/4" x 6'-4" ANGLES | 2 | | | |
| X | 2" x 2" x 1/4" x 8'-4" ANGLES | | 2 | | |
| X | 2" x 2" x 1/4" x 9'-4" ANGLES | | | 2 | |
| Y | 2" x 2" x 1/4" x 6'-0" ANGLES | 8 | | | |
| Y | 2" x 2" x 1/4" x 8'-0" ANGLES | | 8 | | |
| Y | 2" x 2" x 1/4" x 9'-0" ANGLES | | | 8 | |
| Z | 2" x 2" x 1/4" x 6'-0" ANGLES (POSTS) | 4 | 4 | 4 | |
| P | 9" x 6" x 1/4" ANCHOR PLATES (DETAIL A ONLY) | 4 | 4 | 4 | |
| W | 14 GA. STEEL SHEET, 3'-0" x 6'-0" | 1 | | | |
| W | 14 GA. STEEL SHEET, 3'-0" x 8'-0" | | 1 | | |
| W | 14 GA. STEEL SHEET, 3'-0" x 9'-0" | | | 1 | |
| | 1/2" x 1-1/2" HEX BOLTS (INCLUDING NUTS) | 18 | 18 | 18 | |
| | 1/2" x 3" LENGTH "J" BOLTS (INCLUDING NUTS) | 6 | 6 | 6 | |
| | 1/2" DIA. LOCK WASHERS (FOR ABOVE BOLTS) | 24 | 24 | 24 | |

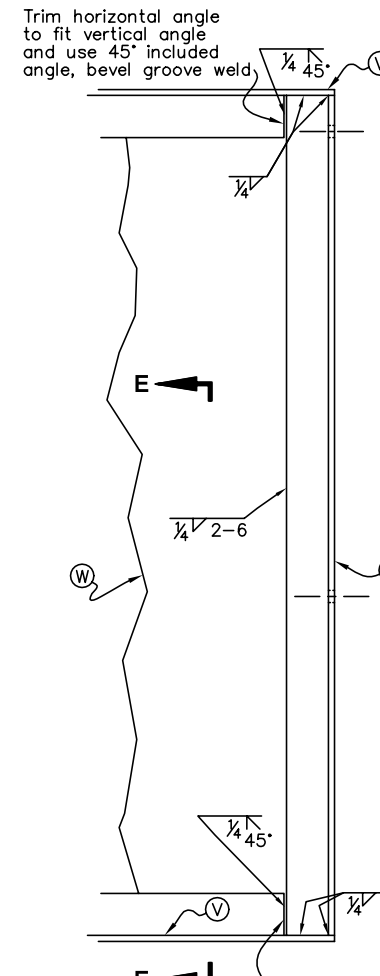
| ITEM | WEIGHT IN POUNDS (STEEL) | | | |
|---|--------------------------|---------------------------|----------------------|--|
| | 36" & 42" DIA. RISER | 48", 54" & 60" DIA. RISER | 66" & 72" DIA. RISER | |
| 2" x 2" x 1/4" ANGLES (18) | 327 | 404 | 442 | |
| ANTI-VORTEX STEEL SHEET (1) | 59 | 79 | 84 | |
| STEEL BOLTS, NUTS AND LOCK WASHERS (24) | 6 | 6 | 6 | |
| ANCHOR PLATES (4) (DETAIL A ONLY) | 15 | 15 | 15 | |
| TOTAL STEEL (DETAIL A ONLY) | 407 | 504 | 547 | |
| TOTAL STEEL (DETAIL B ONLY) | 392 | 489 | 532 | |

TOTAL (MIN.) CONCRETE REQUIRED (DETAIL B ONLY) 0.06 CU.YD.



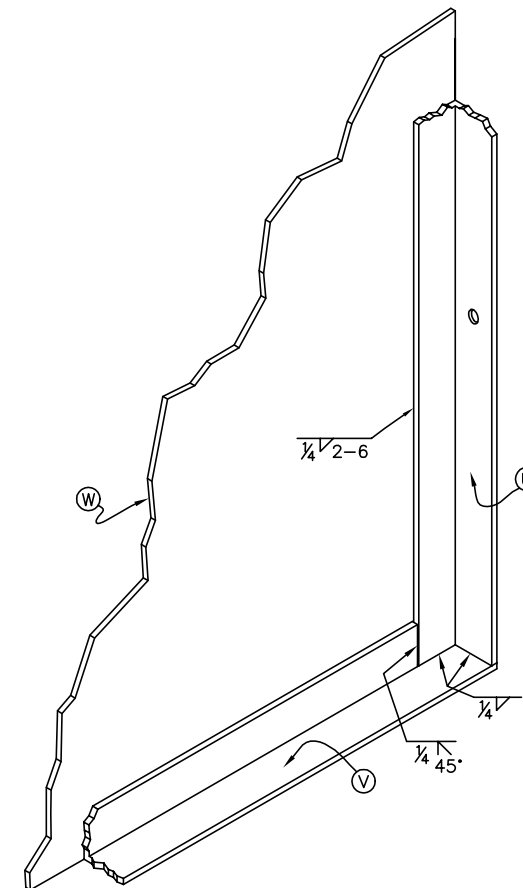
SECTION E-E

ANTI-VORTEX DETAIL



ELEVATION

Trim horizontal angle to fit vertical angle and use 45° included angle, bevel groove weld



ANTI-VORTEX SHEET CORNER DETAIL

FABRICATION NOTES:

- ALL ANGLES, SHEETS AND PLATES TO BE SECURELY WELDED AND/OR BOLTED AS SHOWN ON THE DRAWING, IN ACCORDANCE WITH SPECIFICATIONS.
- ALL WELDS AND HEAT AFFECTED AREAS, ON GALVANIZED METAL SHALL BE TREATED IN ACCORDANCE WITH CONSTRUCTION SPECIFICATIONS.
- WHEN MATERIALS USED ARE NOT GALVANIZED, ALL PARTS SHALL BE PAINTED ACCORDING TO PAINT SYSTEM "C" OF PAINT SPECIFICATIONS.
- INSTALL METAL ANTI-VORTEX WALL AT 90° TO CENTERLINE OF STRUCTURE.

REQUIREMENT TABLE

- X IN BOX INDICATES DETAILS WHICH APPLY TO STRUCTURE
- RACK WITH ANTI-VORTEX DEVICE FOR _____" DIA. PIPE RISER
- METAL TYPE, STEEL
- PROTECTIVE COATINGS, GALVANIZED OR PAINTED ACCORDING TO PAINT SYSTEM "C" OF PAINT SPECIFICATION
- POSTS WITH ANCHOR PLATE (DETAIL "A")
- POSTS WITH CONCRETE BASE (DETAIL "B")

DEBRIS RACK WITH ANTI-VORTEX DEVICE FOR 36", 42", 48", 54", 60" AND 72" DIA. RISER